



U.S. DEPARTMENT OF
ENERGY



2010 CONGRESSIONAL NUCLEAR CLEANUP CAUCUS

SAVANNAH RIVER SITE AIKEN, SOUTH CAROLINA

MARCH 18, 2010

Jack Craig, Acting Manager, U.S. Department of Energy Savannah River Operations Office

Garry Flowers, President & CEO, Savannah River Nuclear Solutions, LLC

Jim French, President & Project Manager, Savannah River Remediation

Roy Schepens, Vice President, Parsons



EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

EM is Embarked on a Journey to Excellence

Our Vision:

“EM completes quality work safely, on schedule and within cost, and delivers demonstrated value to the American taxpayer.”



EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

EM Mission and Priorities

“Complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research.”



- Activities to maintain a safe, secure, and compliant posture in the EM complex
- Radioactive tank waste stabilization, treatment, and disposal
- Spent nuclear fuel storage, receipt, and disposition
- Special nuclear material consolidation, processing, and disposition
- High-priority groundwater remediation
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning (D&D)



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

EM Program Goals

- **Risk Reduction**
 - Ensure the safety and health of the public and the workers
 - Protect the environment
 - Reduce the EM Footprint by 90% by 2015
- **Maintain Compliance**
 - 37 compliance agreements with state and federal regulatory agencies
 - Complete building the capability for dispositioning tank waste, nuclear materials, and spent nuclear fuel
- **EM American Recovery and Reinvestment Act Goals**
 - Thousands of jobs created or saved
 - Reduce the EM Footprint by 40% by 2011
- **Improve Project Performance**
 - Improve construction project performance
 - Deliver all projects on time and within cost
 - Get EM projects removed from the GAO High-Risk List
- **Establish strategic options for Special Nuclear Materials, Spent Nuclear Fuel, Radioactive Tank Waste, Groundwater and Excess Facilities not currently in the EM portfolio**
 - Overall objective is to reduce life-cycle costs and shorten the period of program execution



EM Strategic Goals

- Improve **Safety Performance** with the goal of zero accidents/incidents
- Improve **Project Management**
 - Restructure the project portfolio
 - Adapt the Office of Science construction project model to EM
 - Construction Project Review, front end planning; appropriate pricing and contingency
 - Establish Performance Metrics for EM operating projects
 - Align project and contract management
 - Streamline the acquisition process
- Achieve **Excellence in Management and Leadership** with the objective of making EM an employer of choice in the Federal government
- Align **Headquarters and Field Operations** in order to streamline decision making and improve efficiency
- Utilize **Science and Technology** to optimize the efficiency of tank waste, excess nuclear materials, spent nuclear fuel and groundwater treatment and disposition
 - Evaluate programmatic alternatives to smartly reduce the cost of the program and period of execution



Savannah River Site

Long-Term Asset



Rich History

- Established in 1950 to support national defense missions
 - Produced tritium (only U.S. source) and weapons-grade plutonium
 - Over 38,000 workers at peak
 - Site covers 198,000 acres [310 sq. mi.]

Today

- Multi-program Site with National Missions: DOE-Environmental Management (EM) and National Nuclear Security Administration (NNSA)
- EM cleanup and risk reduction mission is top priority
- Making measurable progress in cleanup of legacy waste contamination, reduction of stored legacy waste, and closure of defense-related nuclear reactors
- Federal workforce focused on contractor performance
- Highly skilled workforce >12,000



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Savannah River Site

Greatest Resource: Skilled Workforce

DOE: Savannah River Operations Office

NNSA: Savannah River Site Office

Office of Site Engineering and Construction Management

U.S. Forest Service

U.S. Nuclear Regulatory Commission

U.S. Army Corps of Engineers

EM Contractors:

- Savannah River Nuclear Solutions [Site Management & Operations and Savannah River National Laboratory]
- Savannah River Remediation [Liquid Waste operations]
- Parsons [Salt Waste Processing Facility construction and operations]
- Wackenhut [Security]
- University of Georgia [Savannah River Ecology Laboratory]
- Recovery Act Hires/Subcontractors



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

SRS EM Mission

**Safely and Efficiently Clean Up Environmental Legacy * Reduce Risk
Protect Public Health and Environment * Transform SRS for the Future**

Where We Started



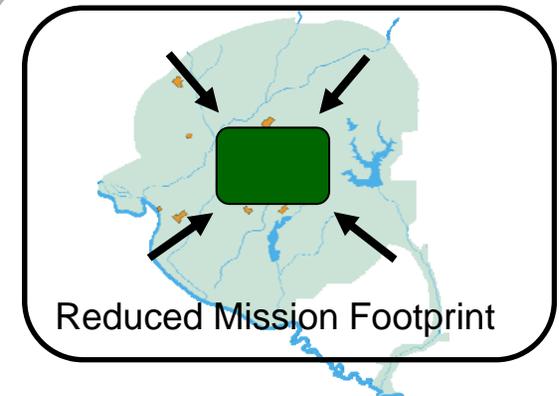
- 800+ contaminated facilities, soils and groundwater
- Excess nuclear materials
- 37 million gallons radioactive liquid tank waste

Ongoing Missions



- Environmental Cleanup
- Science leadership
- Innovative technology
- National/Homeland security
- Nuclear nonproliferation
- Energy independence

The Future



- Cleanup of environmental legacy complete
- Home to ongoing missions of national importance



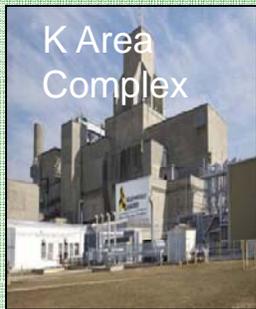
EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

SRS is Getting the Job Done

CLEANUP SOLUTIONS THAT RESOLVE THE NUCLEAR WASTE LEGACY

- Turning radioactive liquid waste to a solid, safe form for disposal since 1996
- Disposing of salt waste
- Emptying and closing radioactive waste tanks
- Completing disposal of solid waste [>30,000 drums of TRU waste dispositioned] - over 50% total legacy TRU waste volume at SRS
- Protecting groundwater with state-of-the-art technologies developed at SRNL
- Single integrated cleanup of large contaminated areas [saving \$\$ and time]
- Decommissioned 249 facilities, or over 2.5 million square feet
- Remediated over 368 of 515 soil and groundwater waste units



GATEWAY FOR NATIONWIDE NUCLEAR MATERIALS CONSOLIDATION AND ULTIMATE DISPOSITION

- Maintaining critical infrastructure and capabilities [H Canyon, K Area]
- Placing nuclear materials in a form for re-use or safe disposal
- Recycling uranium for commercial power production
- De-inventorying and shutting down of other facilities to reduce cost & enhance security

CONTINUING VITAL MISSIONS FOR NATIONAL SECURITY AND ENERGY INDEPENDENCE

Converting Nuclear Materials to Produce Electricity * Homeland Security
Center of Excellence for Hydrogen Technology * Recovering Tritium to Maintain Our Nation's Defense



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

SRS Budget Summary ***(\$M)***

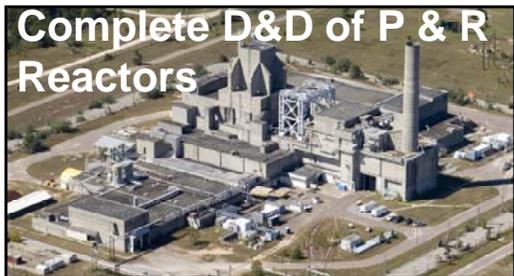
ENVIRONMENTAL MANAGEMENT APPROPRIATION	FY 2010	FY 2011 Request
Environmental Cleanup	1,210	1,218
Safeguards & Security	132	132
Federal Program Direction	55	54
TOTAL EM BUDGET AUTHORITY	1,397	1,404

AMERICAN RECOVERY AND REINVESTMENT ACT	1,615
---	--------------



Quest for Continued Success

Key Baseline Priorities for Fiscal Year 2011



DOING IT ALL SAFELY.



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

SRS Cleanup and Footprint Reduction

\$1.6B in American Recovery & Reinvestment Act Funding



ARRA-Accelerated Big Picture

SRS Recovery Project Goals

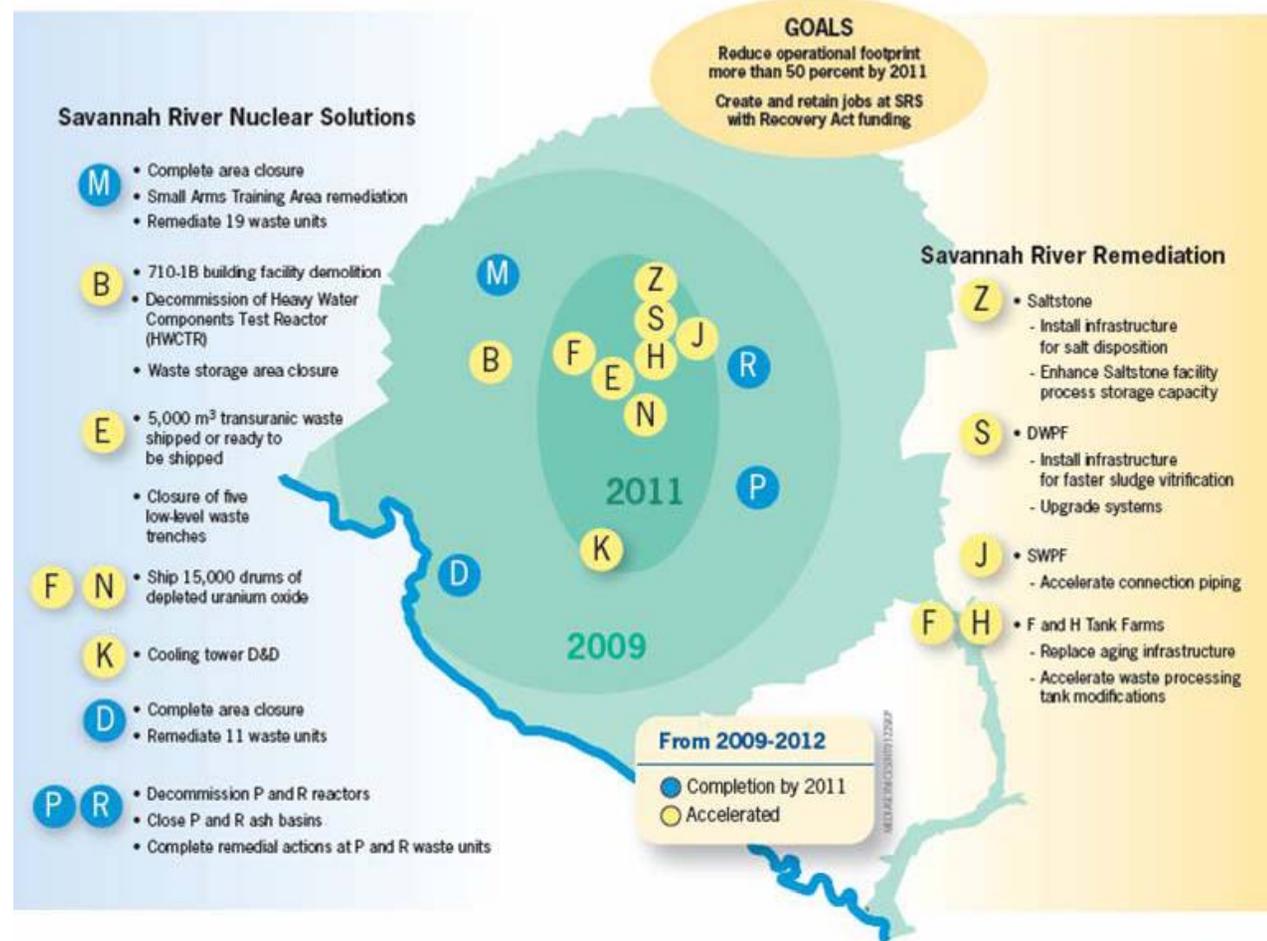
CREATE jobs

STIMULATE local economy

ACCELERATE SRS cleanup program

REDUCE SRS industrial area by more than 50% by 2011

ENSURE reduction of environmental risk with significant return on investment



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

ARRA at SRS = More Opportunities for Success

Taking Recovery And Results Forward (Progress as of 02/2010)



Jobs

- Five job fairs * 3114 people working on SRS Recovery Act Project
- 37 Road to Recovery tour stops * 1,500 assisted with job searches

Economic Stimulation

- \$271M in contracts awarded (87% competitively bid)
- \$186M in contracts awarded to small businesses
- \$108M in contracts awarded within neighboring South Carolina and Georgia communities

Cleanup Acceleration and Risk Reduction

- Completed 119 Transuranic (TRU) Waste shipments
- Completed disposal of remaining legacy PUREX solvent waste
- Ongoing decommissioning of R and P Reactors



EM Environmental Management

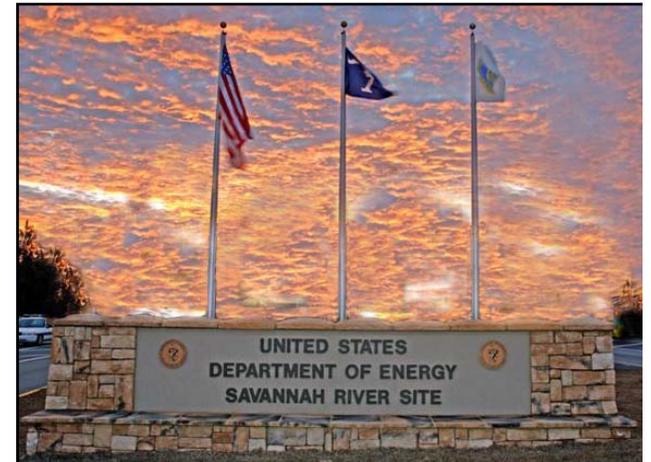
safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Focused Priorities for SRS Team

Successful Performance * Raising the Bar * Securing the Future

- **Accelerate Cleanup with Recovery Act Funding**
 - Strong DOE and contractor oversight
 - Work completed on schedule and within budget
 - Openness and accountability to taxpayers
- **Maintain Perspective**
 - Disposition of nuclear materials and liquid waste remain high priority projects
- **Demonstrate Ability to Deliver**
 - Meet cleanup commitments
 - Execute all work safely
 - Make reductions in risks
 - Cut lifecycle costs
 - Maintain collaborative partnerships with SRS communities



Garry Flowers, President & CEO

Savannah River Nuclear Solutions, LLC

- **Safely perform our mission to meet and exceed the expectations of DOE as M&O Contractor**
 - Quality work on time and within budget
- **Manage footprint reduction goals within expectations**
 - Stewards of \$1.4 billion of Recovery Act funding
 - Provide local jobs and stimulate the local economy



EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

Safety Performance

Zero Incidents Culture – Trending in the Right Direction

- **Operations/Subcontractors**
 - Over five million hours without lost time due to injury/illness
- **Construction**
 - Over 24 million hours without a lost time injury (since June 1998)
- **VPP Star Recertification in process**
- **Safety Improvement Compensatory Actions & Measures (SICAM)**
- **Third Party Safety Assessment**



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Operational Excellence

- **Significant ARRA progress**
 - TRU waste disposal six years ahead of schedule
 - 205,000 pounds of contaminated lead sent offsite for commercial recycling
 - All legacy PUREX waste shipped to Nevada Test Site
- **H Canyon completed all planned processing campaigns, including material from Y-12, Los Alamos National Laboratory and Oak Ridge**
- **Receipt and storage of foreign research reactor fuel from Australia and Japan**
- **K Area accelerated receipts of non-pit plutonium**
- **Savannah River National Laboratory**
 - Retained position as safest national lab
 - Eight U.S. patents issued in 2009



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

SRNL Science & Technology

We Put Science to Work



- **Support complex-wide cleanup**
 - Transformational R&D to increase high-level waste throughput
 - In-tank pretreatment solutions to decrease waste volume
 - Center for Sustainable Soil and Groundwater Solutions
 - Complex lead on in-situ decommissioning of nuclear facilities
- **Technologies to support SRS FY10 Goals**
 - Accelerate completion of waste solidification mission
 - Novel grout formulations for D&D of reactor facilities
 - Disposition paths for one-of-a-kind nuclear materials
- **Building on SRNL environmental management competencies to accomplish work for other customers/partners**
 - Law enforcement and national/homeland security support
 - Including newly expanded FBI radiological evidence laboratory



Rotary Microfilter



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Looking Forward

- **Nuclear Materials Management**

- Initiate fuel shipments from L to H Area
- Complete loading of 20 trailers of low enriched uranium to TVA
- Complete plutonium deinventory receipts
- Receipt, handling and storage of foreign fuel from Japan, Turkey and Israel
- Continue dissolving legacy plutonium in HB Line
- Both canyons supporting TRU remediation
- Complete H Canyon DSA Safety Analysis Upgrade



Savannah River

Nuclear Solutions, LLC

A Fluor Daniel Partnership



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Looking Forward

- **EM Footprint Reduction/ARRA**
 - Create and retain ~3000 jobs
 - Reduce footprint by more than 50 percent
 - In-situ decommissioning of two production reactors
 - Removal and final disposal of legacy transuranic waste
 - Complete cleanup in four large industrial areas
- **Savannah River National Laboratory**
 - Perform technology development in support of EM initiatives to reduce risk
- **Other**
 - Obtained Earned Value Management Certification
 - Modernize business processes
 - Achieve VPP recertification



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

Jim French, President & Project Manager

Savannah River Remediation

Scope of Work

- Savannah River Remediation (SRR) began as Liquid Waste contractor July 1, 2009 [contract award 12/2008, Legacy SRS contractor 1989-2008]
- SRR workforce = 2,000 employees
- SRS Liquid Waste Operations includes dispositioning 37 million gallons of waste, the highest risk material in South Carolina
- Conscientious stewards of the \$200 million Recovery Act funding



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Safety Performance of SRR

RISK	PERFORMANCE
Chemical: Managing over 61 million pounds of chemicals	No reportable employee or environmental impact > 4 years
Industrial: Working within many Site industrial hazards	Injury frequency rates 38 times lower than the national industrial average
Radiological: Processing millions of gallons of highly radioactive liquid waste for final disposition	No radiological intake or personnel contamination in the past 23 months

Recent Safety Awards & Milestones

- 22 Million+ Safe Hours – Construction
- 13 Million+ Safe Hours – Liquid Waste Operations
- 2 Million+ Safe Hours – SRR, since July 1, 2009

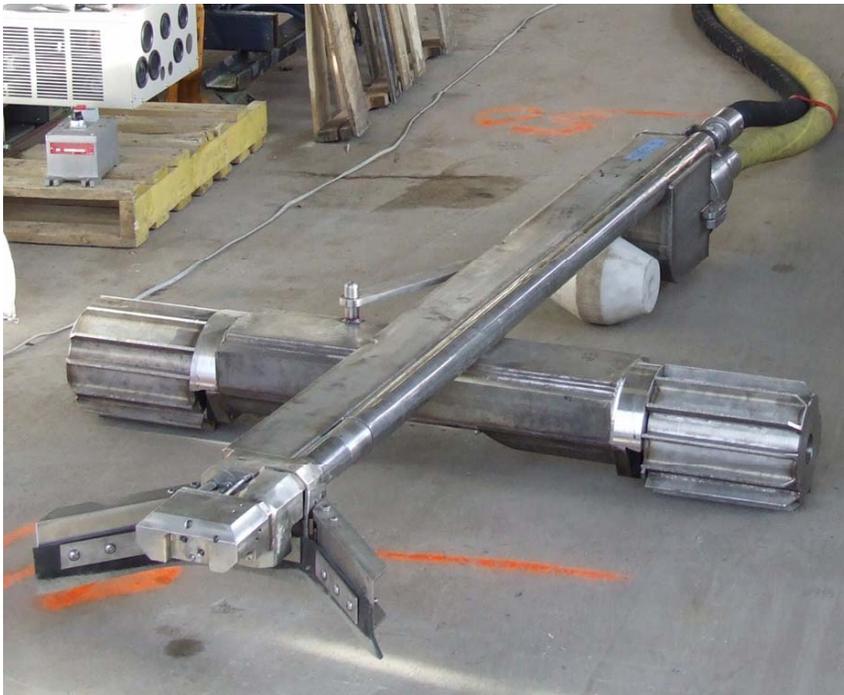
Recent Safety Awards & Milestones

- 7th Consecutive VPP Star of Excellence Award (only site in Complex)
- National Safety Council
 - Occupational Excellence Achievement Award
 - Million Work Hours Award



Science and Technology at Work in Liquid Waste

Sand Mantis/Waste Sampler



Sand Mantis removes waste from bottom of test tank



Waste sampler does its work on the test tank bottom



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Science and Technology at Work in Liquid Waste

Sand Mantis



Sampler



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

SRR Liquid Waste Operations

Cost and Schedule Achievements/Project Management

Interim Salt Waste Processing

- Actinide Removal Process/Modular Caustic Side Solvent Extract Unit: Began operations April 2008
 - ~850,000 gallons processed to date
 - Providing Salt Waste Processing Facility operational experience to improve its future reliability
 - SRS is the only Site in DOE Complex processing salt waste

Defense Waste Processing Facility

- Poured 196 canisters of glassified waste in 2009; 39 canisters since January. 1

Since operations began at DWPF in 1996:

- Poured over 11 million pounds of glass
- Filled over 2,800 canisters
- Removed more than 20 million curies from tanks

Tank Closure

- Four tanks on track to meet near-term Federal Facilities Agreement operational closure schedule

Annual Budget

- Approx. \$593 million FY10 and FY11



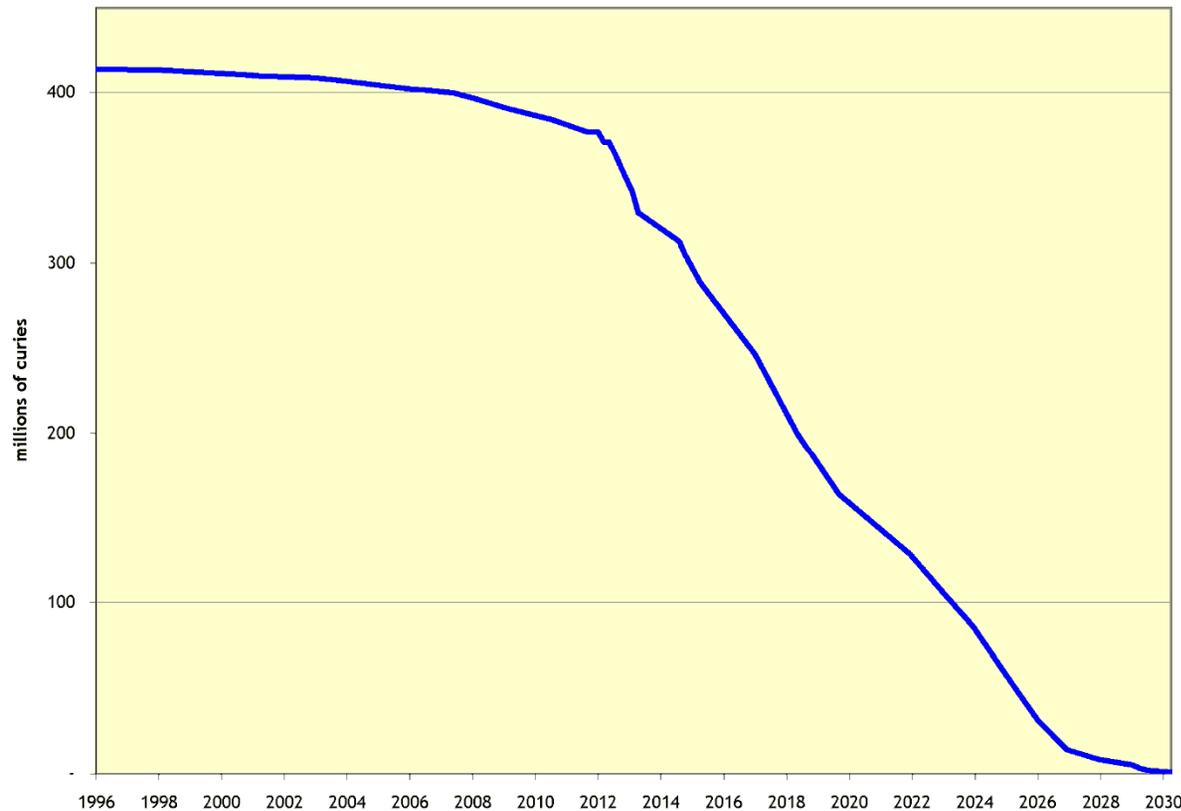
EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

SRR Delivers Results

Curies stored in SRS HLW Tanks



SRR efforts leading to a significant reduction in the risk to workers, to the environment, and to the public by accelerating the removal of waste from the oldest waste tanks and cleaning tanks for operational closure.



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Roy Schepens, Vice President

Parsons

Infrastructure and Technology

- Contractor for Salt Waste Processing Facility (SWPF) project
[design, construct, and operate for one year]
- Process over 33 million gallons of stored highly radioactive salt waste, reducing a significant hazard to the public and environment at SRS
- Support DOE's highest SRS priority to close tank farms; reduce risk and complete the DOE EM cleanup mission
- December 2008: Final design completed and full construction of first-of-kind facility authorized by DOE
- Safety of our workforce is Parsons 1st priority



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

www.em.doe.gov

SWPF Project Progression

SRS J-Area



March 2010



June 2008



December 2008



August 2009

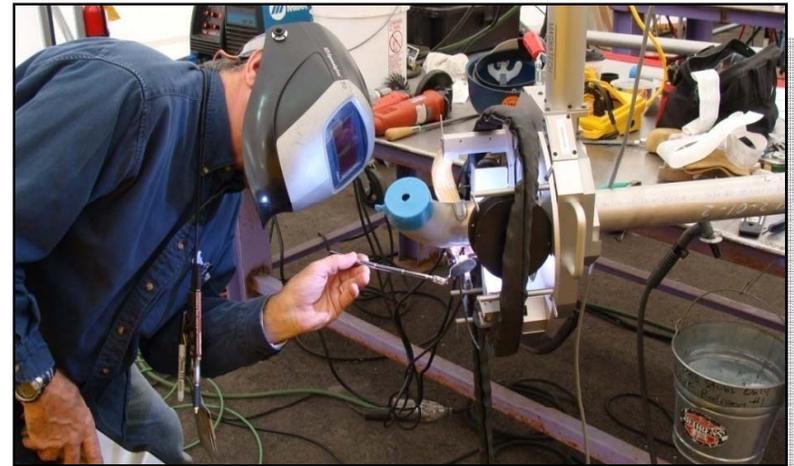


EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

SWPF: Proven Technology and Performance

- **Proven Technology:** Removal of radioactivity from bulk of stored tank waste at SRS
- **Schedule:** Start radioactive operations (early finish) July 2013 – October 2015
- **Cost:** Total Project Cost projected to be within the DOE Performance Baseline of \$1.339 billion
- **Lessons Learned (LL) Implemented:** Progressive program in place implementing LL from DOE, federal, and commercial construction projects



Setting the Right Standards in Welding Performance Onsite and at Supplier Facilities



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

SWPF Project Management

- **Supplier Oversight Plans In Place:** Full-time Parsons oversight in supplier facilities for SWPF critical components ensures safety and quality standards are met
- **Active Construction And Engineering Team:** Engineering proactively working in support of constructability reviews with required equipment fabrication to meet construction's needs real-time
- **Early Operations Involvement:** Full-time Parsons involvement with suppliers from start of design and participation in constructability, maintenance, operations, and commissioning reviews
- **Pipe Welding:** Onsite pipe fabrication facility in full operation
- **Active Lessons Learned (LL) Program Sets A Standard:** Processed 243 improvements to date – 17 LL's have been published external to the project for use by DOE complex and other Parsons projects



Caustic-side Solvent Extraction / Cross Flow Filter Full Scale Integrated Test Operation

- Testing will confirm coalescer performance and extractor performance with design modifications from earlier testing
- Gain additional information for system operation and maintainability



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Parsons Delivering Results at SRS

2010-2011 SWPF Goals

- Continue construction of facility walls and decking
- Fabricate and install construction engineered equipment
- Continue with piping fabrication and installation
- Start HVAC installation
- Prepare for startup, which advances SRS EM cleanup and risk reduction goals



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

PARSONS

www.em.doe.gov

32